REMARKS

Claims 1, 2, and 4-10 are pending. Claim 3 is cancelled. Claims 1, 5, and 7 are currently amended.

Claims 1 and 5 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written Specification. Regarding claim 1, Examiner points out that page 8, lines 24-25, states that the ore if heated "preferably to at least 300 lump feed material", "not less than 300° C" as claimed. Regarding claim 5, the text "less than 600° C is not supported.

Applicant has observed that there is a typographical error in the Specification. There is a vague pronoun reference in the third paragraph on page 8. In lines 23-24 that makes reference to the temperature and reads that "at least about 200 degrees C, but preferably to at least 300 C", actually refers to the temperature of the waste off-gas used to heat the storage bin, not the temperature of the lump feed material. This is supported by original claim 5, which reads "A process according to claim 4 wherein the waste off-gas temperature is in excess of 300° C upon introduction into the feed storage bin". Furthermore, the temperature of pre-dried lump feed material is given on page 4, line 14, page 5, line 22, and page 9, line 21, as being less than 200° C. The thrust of the disclosure is that by keeping the pre-dried lump feed material below a temperature less than 200° C, then fines can be reduced. The phrase on page 8, "preferably to at least 300 C" is open ended on the top end, and is internally inconsistent with the spirit and teaching of the rest of the disclosure. The Specification (third paragraph on page 8, lines 23-24) is currently amended to correct the vague pronoun reference. Claim 1 is currently amended to [drying] "a temperature less than 200° C". Claim 1 is further amended to read on a particular type of lump ore, "sedimentary lump ore", which is particularly susceptible to forming fines, is not dried at low temperatures over a long period.

With regard to claim 5, claim 5 is currently amended to again read on 300° C. The 35 U.S.C. 112 rejections are respectfully overcome.

Claims 1, 3-6, and 9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Meissner et al. (US Pat. No. 5,437,708) in view of PBK Engineering Ltd (1992) and Stephens, Jr. (US Pat. No. 5,810,906). With respect to claims 1 and 3, Examiner admits that Meissner et al. do not disclose lump feed material is stored for a predetermined time in an open atmosphere, or that the feed is dried at a temperature of less than 300 C to a water content less than about 0.5%. However, Examiner asserts that PBK Engineering teaches holding stockpiles for of ore for 4 days, that Stephens teaches that the feed should be dried to less than 0.5%, and that the temperature range for drying is 300° C to 500° C.

Applicants' currently amended claim 1 reads on sedimentary lump ore, not a blend of carbon and iron oxide as taught by Meissner. Meissner generates fines (i.e. finely ground carbon and iron materials), while Applicant is minimizing fines. PBK Engineering teaches on page 6-1, paragraph 6-2 (the Examiner has failed to provide all pages of the cited reference) the storage of ore sufficient to keep the plant operating. The PBK Engineering reference does not teach a predetermined time that the ore is stored, nor does the PBK Engineering reference teach an order of rotation for the ore. The ore can be used in any order. The ore could be used immediately or not at all. The stockpile is enough ore for the plant to operate 4 days in case there is a cessation of ore from the mine. In effect, the 4-day stockpile is a buffer, not an aging process. Applicants claim a predetermined time, therein to release internal stresses. Applicants' stockpile enables an aging process, not a buffer in the case that the mine has to close for a period. Stephens teaches that the feed should be dried to less than 0.5% and that the temperature range for drying is 300° C to 500° C. As previously discussed, Applicants' pre-drying step is capped at about 200° C, which is well below the minimum low temperature taught by Stephens, and there is no overlap. Claim 3 is cancelled, but to address the Examiner's application of Ex Parte Khusid, 174 USPQ 59, it should be readily apparent that since Stephens doesn't teach a month long aging storage prior to the pre-drying step, and an increase of 100° C to 600° C over a max of 200° C disclosed and taught by the Applicants (Stephens teaches a range of 300° C to 800° C in col. 6, line 40) that the proposed higher temperatures would result in a much higher production of fines using the claimed "sedimentary" lump ore. As taught in the

Specification on page 6, third paragraph, just eliminating the aging step resulted in an increase of fines of 10%, so taken with the higher temperatures taught by Stephens, there would a further increase in fines production.

Examiner states regarding claims 4 and 6, that the cyclones and rotary kilns taught by Stephens are covered by the term "storage bin", and it would be obvious to use Meissner's exhaust gases to preheat Stephens' cyclones and rotary kilns.

Applicants disagree with the Examiner that a storage bin is equivalent to cyclones and rotary kilns. Both apparati keep the material therein in motion, while a storage bin maintains the material therein at rest. Furthermore, Applicants' and Meissner's exhaust gases are from a DRI process, while Stephens' exhaust gases are from oxidizing steps that burn the sulfur out of the ore, therein generating sulfur dioxide (col. 2, line 67). Applicants' exhaust gases can be combined with cooling air 28, as necessary (page 8, line 25). Meissner teaches that the waste gases can indirectly be used to heat the reformer. Applicants claim in claim 4 that the waste gases are introduced to the storage bin. A couple of problems exist with the Examiner's argument. First and foremost, why would the Applicants want to add sulfur dioxide to the storage bin? This would merely lower the quality of the iron ore, and, combined with cooling air 28, create more emission gases that need to be cleaned up. Secondly, Meissner teaches that the waste gases can be used indirectly via a heat exchanger to heat the reformer. Meissner does not teach a process where waste gases, especially those laden with sulfur dioxide, ever come into direct contact with the iron ore, as shown in Stephens' steps 18 and 30. Meissner teaches away from the Examiner's combination, as it is obviously not useful. The rejections of claims 4 and 6 are therefore respectfully overcome.

Claim 5 stands rejected as being obvious, even though the ranges do not overlap.

Applicants have amended claim 5 to recite its original temperature of 300° C. There is now a difference of 300° C between Applicants' temperature and Stephens' temperature of 600° C. Taken

with its dependency from parent claim 1, and intervening dependent claim 4, claim 5 is believed to be allowable.

Claim 2 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Meissner et al. (US Pat. No. 5,437,708) in view of PBK Engineering Ltd (1992) and Stephen, Jr. (US Pat. No. 5,810,906) as applied to claim 1, in view of Stoughton (1908). Stoughton discloses a method of transportation of iron ore via shipping where it can take up to 4 months.

Applicants claim in claim 2 that the ore is held at least 1 month prior to pre-drying. This requires control over not only how big the stockpile is, but rotating the consumption of ore so that it ages for least 1 month. Stoughton teaches on page 22 that there is never a delay of more than a few hours at a time. Apparently, some ore will produce very few fines and some will have a great deal. Most ore in the United States is "metamorphic" and is far less susceptible to fines generation than "sedimentary" ore. As Stoughton is conveying ore mined in North America, it is also possible that the problem was less severe. In any case, the issue of whether to rotate the stock of ore so that it is at least 1 month old is not addressed by Stoughton. The rejection is respectfully overcome.

Claim 7 stands rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over Villarreal-Trevino et al. (US Pat. No. 6,395,056) in view of Meissner et al. (US Pat. No. 5,437,708). Examiner has cited MPEP 2181, stating that means plus function be given broadest interpretation. Examiner admits that Villarreal-Trevino et al. do not teach a storage bin where contents are heated to 300 C and dried to 0.5% moisture, however, the Examiner states that the preheater disclosed by Villarreal-Trevino et al. is capable of meeting this limitation.

Applicants' claim 7 is currently amended to correct the upper temperature to 200 C, and to recite the pre-drier element in such terms that it is no longer in means plus function language. Villarreal-Trevino et al. teach in col. 3, line 20, that the temperature of the particles exiting the preheating device is 700° C. Villarreal-Trevino et al. (in claims 1,2), claim that the temperature of

the particles exiting the preheating device is above 600 ° C. The Applicants' temperature limitation overcomes Villarreal-Trevino et al. Villarreal-Trevino et al. teach that the particles are combusted in the preheated device 12 (col. 4, lines 19-26) using a combination of air and natural gas (col. 4, line 27). The temperature of the material feeding into the furnace is set not by the temperature of the gases entering the hopper, but by the heat given off during combustion of the iron particles and the combustion gases. This temperature is approximately 700° C, so the Examiner is in error when she asserts that Villarreal-Trevino et al. could operate their pre-drier at any temperature. Furthermore, Applicants' pre-drier does not claim any combustion gases. The rejection is respectfully overcome.

Claims 8 and 10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Villarreal-Trevino et al. (US Pat. No. 6,395,056) in view of Meissner et al. (US Pat. No. 5,437,708), as applied to claim 7 above, and further in view of Becerra-Novoa et al (US patent 5,445,363). Examiner states it is obvious to insulate Villarreal-Trevino et al. piping.

Applicants' contend that possibly Villarreal-Trevino et al.'s means for transporting the heated material is not insulated, as the heat of combustion given off by the natural gas may generate so much heat that Villarreal-Trevino et al. need to cool the pre-drier to keep the temperature down. Villarreal-Trevino doesn't appear to have any means, other than a hole, for transporting the heated feed materials. In any case, the citations do not read on insulation or a transporting means. Furthermore, Applicant's claim 8 is a dependent claim depending from claim 7, and has all the limitation of the parent claim. Claim 8 derives its novelty from claim 7.

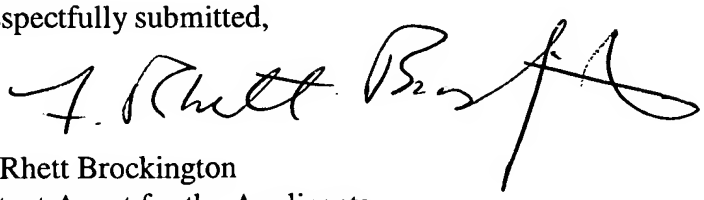
With respect to claim 10, Examiner states that Villarreal-Trevino et al. (Figure 5, col. 4, line 20, to column 6, line 16) disclose a heat exchanger (44) and combustion chamber (16) between the means for recovering waste combusted off gas (42) and the feed material storage bin (12). Both the heat exchanger and the combustion chamber provide means for adjusting the temperature of the off-gas.

Applicants' claim 10 is a dependent claim depending from claim 8 and independent claim 7, and has all the limitations of the intervening claim 8 and parent claim 7. Claim 10 derives its novelty from claims 7 and 8.

Since the amendments to the claims do not add more claims than previously paid for, no additional fee is required for the claims.

In view of the foregoing amendment and these remarks, this Application is now believed to be in condition for allowance and such favorable action is respectfully requested on behalf of Applicants.

Respectfully submitted,



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